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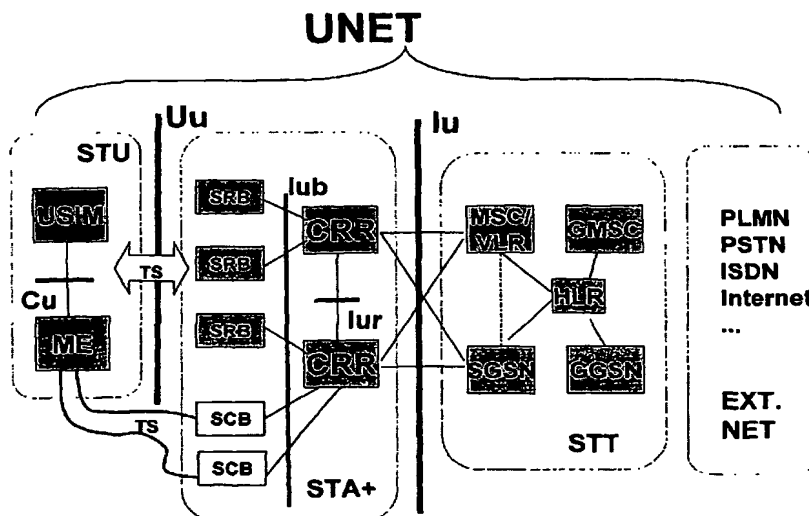
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[Continued on next page]

(54) Title: FIXED ACCESS NETWORK FOR MOBILE TELECOMMUNICATIONS SERVICES AND APPARATUS



(57) Abstract: A telecommunications network for mobile users of the third generation, said (telecommunications network for mobile users (UNET) comprising a user subsystem (STU) and a transport subsystem (STT), associated by means of an access subsystem (STA), which has a general user-access communication interface (Vu) and a transport-access communication interface (Iu) facing them, respectively, being apt to ensure an exchange of information flows (TS) between said subsystems. According to the invention, the user subsystems (STU) can associate to the access subsystem (STA) with a communication through telecommunications cables, i.e. not only with radio communications as indicated in the various standards (such as those of the family IMT2000) and various patterns suggested for obtaining mobile telecommunications networks of the third generation.

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FIXED ACCESS NETWORK FOR MOBILE TELECOMMUNICATIONS SERVICES AND APPARATUS

DESCRIPTION

The present invention relates to a telecommunications network for mobile users, said telecommunications network for mobile users (UNET) comprising a user subsystem (STU) and a transport subsystem (STT) associated by means of an access subsystem (STA), which has a user-access communication interface (Uu) and a transport-access communication interface (Iu) respectively facing the subsystem (STU) and the transport subsystem (STT), being apt to ensure exchange of information flows (TS) between said subsystems.

Based on many tests, a strong increment of the quantity of information exchanged between the users provided with terminals for mobile radiocommunications and the networks of the providers of such services is predicted within a short term.

In view of this future requirement, several national and international organizations operating for the ruling of the radio frequencies and relevant standards for signal treatment, modulation and multiplexing (ITU, ETSI, FCC, etc.), have agreed on the definition of a standard (or families of standards, such as IMT2000) in order to ensure a significant increase of the data exchange rate between the network and the mobile telephone terminal and vice-versa. The family IMT2000 includes, e.g., the new standards called CDMA2000 and UMTS (Universal Mobile Telecommunications System) or 3G (third generation), which will ensure performance of video-conferences and compatibility with the protocols of Internet networks (such as Ipv6) with other networks of the same family, such as DECT and with the wireless telephone networks of previous standards (2G), such as GSM and PCS and relative improvements, such as GPRS, EDGE, etc. (usually indicated with 2.5G).

Therefore, there is reason to believe that diffusion of new terminals in a position to ensure efficient connection to Internet, visualize video-films and reproduce data, voice, musicals and television files downloadable from Internet, will entail a significant increase of the amounts of data in transition in the terrestrial radio networks for the mobile telephony of the next generation.

By way of example, according to UMTS standard the mobile systems of the third generation are designed for multi-medial communications. With these systems,

communications from individual to individual can be improved with quality images and/or video and access to information or services on private and public networks can benefit of the highest data rate available and of the higher communication flexibility of such systems.

5 Moreover, these systems have the following features:

- variable Bit Rate for providing a band width compatible with the required service (ranging from 16 kbps for vocal communication to 2Mbps for "High Multimedia" services);
- multiplexing services with different quality requirements in one single connection;
- .0 - delay requirements for traffic in real time;
- quality requirements ranging from 10% frame error to 10^{-6} bit error rate;
- co-existence with second generation systems (e.g. GSM) and inter-systems handover for better traffic coverage and balancing;
- .5 - asymmetric traffic support for uplink (from user to provider) and downlink (from provider to user).

As a result, the most important features of the network according to UMTS standard are a high bit-rate for the user, compatibility with Internet standards, managing capacity of multi-medial files and connecting capacity of the terminal in "always on" mode.

It is also logically predictable that upon starting the use of UMTS networks the traffic
20 will mainly consist of voice and Internet contents, whereas the portion of multi-medial data traffic is going to increase later.

Since requested information will often be available on the Internet network, it is important to develop an efficient TCP/UDP/IP traffic management in the UMTS network.

25 Therefore, in order to be successful, UMTS network will have to execute a wide range of applications with different performance requirements and service quality.

Consequently, the terminals apt to perform this wide range of services will also incorporate typical features and functions of portable personal computers. As a result, it is predictable that in the future the telecommunications performances required for
30 connection to the networks for mobile services of the third generation will also be integrated in portable personal computers.

In particular, personal computers are quite suitable instruments for performing services

(or applications) that make use of communications with a higher bit-rate.

In conclusion, wireless network providers will have to undertake continuous investments for their network capacity to equal the increasing demand and ensure an acceptable quality service to clients.

5 Capacity problems on both the transport and access networks may arise in the event of a high request for new services on mobile networks. In order to increase transport capacity, also the capacity of the various connections will have to be increased; these increases have no theoretical limits, as the limits are only of financial nature. The access capacity, on the contrary, is limited by the frequency band assigned to each provider; the
10 capacity increases may be managed reducing the size of the coverage cells, i.e. increasing their number; however, it is a solution involving technical and bureaucratic problems, and this operation has anyway a limit if pushed to the extreme.

As to its architectural development, UMTS network consists of a set of logical network elements, each one having a specific function. At its standard level, both the logical
15 elements and interfaces open to each other are defined, so that also the physical network elements will be automatically identified.

The presence of open interfaces, in particular in the access network called UTRAN (UMTS Terrestrial Radio Access Network), allows interconnection to the UMTS network also with modes not expressly provided by the present standards.

20 Concerning the detailed description of the standardized (or in course of definition) services and performances for the mobile telecommunications networks 2.5G and 3G, reference is made to the documentation produced by the groups 3GPP and 3GPP2 (3rd Generation Partnership Project and 3rd Generation Partnership Project 2), also available in synthesis from publications, such as "*WCDMA for UMTS*" Holma and Toskala, 2000
25 John Wiley & Sons, whereas the annexed Figure 1, to be described hereafter, is representing some elements of the UMTS network, which are required for describing the inventive idea.

Therefore, Figure 1 is representing a block diagram of the highest level architecture of a telecommunications network for mobile users UNET according to UMTS standard,
30 comprising three main subsystems interconnected to each other:

- User subsystem STU, indicated in the standard as User Equipment. This user subsystem represents the user terminal system, i.e. a portable terminal, such as a

mobile telephone. Said user subsystem STU is interconnected to the telecommunications network for mobile users UNET, in particular to an access subsystem STA, through a user-access interface Uu, through which a data and voice signal TS is received and transmitted. Said user-access interface Uu is a radio interface; as already mentioned above, it is an open type for operating in association to a large number of terminal of different trade-marks. The user subsystem STU comprises a user identification module USIM, similar to the so-called SIM card of GSM standard, and a mobile equipment ME, i.e. the body of the mobile terminal, communicating through a special equipment interface Cu;

- Access subsystem STA: this access subsystem STA represents the access network for the UMTS standard, the system UTRAN previously mentioned, and connects to a transport subsystem STT through a transport-access interface Iu;
- Transport subsystem STT: this transport subsystem STT, identified as Core Network in the UMTS standard, represents the transport network of the UMTS system. Said transport subsystem STT, besides being interconnected to the access subsystem STA through the transport-access interface Iu, must be able to interconnect to all other existing networks (external networks, PSTN, ISDN, B-ISDN Internet, etc... etc.), identified in Figure 1 by means of a block EXTNET. This transport subsystem STT comprises information switching means, which are peculiar of common mobile telephone systems, i.e. a commutation centre MSC (Mobile services Switching Centre), a database HLR (Home Location Register) and a database VLR (Visitor Location Centre) mainly used for mobility management, an interconnection node (or Gateway) GMSC (Gateway Mobile Switching Centre), a node for managing packet switching SGSN (Serving GPRS Support Node) or GGSN (Gateway GPRS Support Node).

In Figure 1 some radio base stations SRB can be noticed inside the access subsystem STA, corresponding to the base stations defined as Node-B in the UMTS standard, i.e. the radio stations spread over the territory identifying the cells of the mobile telephony system. Therefore, their main function consists in exchanging the data and voice signal TS with the user subsystems STU through the radio interface Uu. Said radio base stations SRB also manage the main radio resources, such as inner power control. Inside the access subsystem STA a network radio controller CRR is comprised, called Radio

Network Controller in the UMST standard. Said network radio controller CRR has complete control of all radio resources of its area, i.e. the radio base stations SRB connected to it through an appropriate controller-stations interface Iub.

The network radio controller CRR controls operation of one or more radio base stations SRB, manages the setting of the radio channels (connections activation and release), frequency-hopping, inner handovers and other functions, communicating with the transport subsystem (STT). A large number of radio base stations SRB existing in a large town area is controlled by a smaller number of network radio controllers (CRR).

Each radio base station (SRB) can manage connection in the network (UNET) through the user-access interface (Uu) of all the user subsystems (STU) located in the surrounding area of the radio base station (SRB); this area, managed by one radio base station alone (SRB), is called a cell. The radio base stations (SRB) are located over the territory in a way to determine a plurality of cells for continuous coverage of the territory itself, minimizing the surfaces where no sufficient radio coverage is available.

The purpose is to ensure continuous connection of the moving user subsystems (STU) to the network (UNET).

Due to the predictable increasing requests of multi-medial information, the network UNET described in Figure 1 will have an increasing traffic from the external networks EXTNET to be let through the transport/access interfaces Iu and access/user interfaces Uu, in both directions. As said above, in order to ensure acceptable quality service to the clients the providers of UMTS networks and wireless network in general will have to undertake continuous investments for equalling their networks capacity to the increasing demand.

It is the object of the present invention to provide an additional interconnection mode of a user subsystem (STU) to the transport subsystem (STT), by means of an enhanced access subsystem (STA+), which besides the limited radio transmission resource may also use a cable transmission not subject to expansibility limits.

This enhanced access subsystem (STA+) interfaces the transport subsystem (STT) through an interface Iu in an absolutely identical way as for the access subsystem (STA) according to the prior art.

This enhanced access subsystem (STA+), besides the classic radio base stations (SRB) being apt to manage bidirectional radio communications with the user subsystems

(STU), also comprise cabled connections and required devices being apt to associate the user subsystems (STU) to the network radio controllers (CRR).

This set of fixed apparatuses to be added to the access subsystem (STA) for connection between a user subsystem (STU) and a radio network controller (CRR) without taking
5 recourse to the radio resource, will be called "Cable Base Station" (SCB). Said cable base stations (SCB) will be associated to a radio network controller (CRR) through a standard interface Iub, whereas they will be able to associate to the user system (STU) through the most common standards used for interconnecting a personal computer to a LAN (Local Area Network).

10 The user systems (STU) connected to the network UNET through the cable base stations (SCB) will be treated by the transport subsystem (STT) in the same way as for the usual terminals connected to the net UNET through the usual radio base stations (SRB); their mobility, i.e. their connecting capacity to any cable base station (SCB) can be managed by the usual mobility managing procedures (such as localizing procedures) being used
15 for all terminals connected to the UNET network.

In this frame, it is the main object of the present invention to provide a telecommunications network for mobile users, which can service a larger number of users with the same quantity of radio base stations (SRB) and radio frequencies utilized.

In this context it should be noticed how the most valued resource for an operator of mobile
20 telecommunications services is represented by the frequency band for which licences are owned. The present invention ensures service to a number of users located in particular environments, who do not need to move while using the service, i.e. without consuming such a radio resource.

It should be noticed how a significant set of mobile services of the third generation will be
25 based on applications to be executed on personal computers, how such services can only be adequately enjoyed in appropriate positions (such as sitting and leaning to a board) and how the band request may be so significant as to rapidly exhaust the radio resource available; these services are surely available in a more efficient and effective way by taking recourse to the solution object of the present invention.

30 A further object of the present invention is to provide a telecommunications network for mobile users, which is compatible with the new standards of cellular telephony, in particular UMTS standard.

In order to achieve such aims, it is the object of the present invention to provide a telecommunications network for mobile users and/or base station and/or network radio controller and/or method for sending information, incorporating the features of the annexed claims and figures, which form an integral part of the description herein.

5 Further objects, features and advantages of the present invention will become clear from the following detailed description and annexed drawings, which are supplied by way of non limiting example, wherein:

- Fig. 1 shows a basic diagram of a mobile telecommunications network (UNET), according to the prior art;
- 0 - Fig. 2 shows a basic diagram of a telecommunications network for mobile users (UNET) according to the prior art, with the implementations of the present invention.

The present invention is based on the principle that a considerable portion of the new multi-medial traffic will be utilized in indoor environments, from terminals integrated to personal computers or quite similar to personal computers, that such services may require a high connection speed, whereas they may not often require a displacement capacity while the service is in use. In such cases it may be convenient to connect these terminals in the network through a fixed connection. Many environments may have a certain number of stations available with a socket for connecting the terminal. It is not excluded that such a socket may be replaced by means of low power wireless technologies (such as bluetooth), in order to reduce the need of patch cables.

20 A network architecture has been conceived in view of this future development, ensuring a considerable improvement of its capacities in the respect of the new standards and in the most convenient way as possible.

25 As a result, the inventive idea consists of an alternative connection of a terminal of a network for mobile users UNET, which besides the usual radio base stations (SRB) is also providing cable base stations (SCB), whose interfaces are represented in the annexed Figure 2.

Therefore Figure 2 is representing a diagram of the enhanced access subsystem (STA+), also comprising base stations according to the present invention.

30 Besides the above advantage of increasing the access capacity of the global system with equal occupied frequencies, and equal sites with radio systems, the present

invention still has further advantages.

Other advantages are:

- Removal of the power control problem,
- Possibility of reducing energy consumptions for longer battery life (it

5 would be useful to also equip the stations preset for connection to a cable base station SCB with an electric socket),

- Elimination of the problems associated to the exposure of the user to electromagnetic radiation.

Moreover, the telecommunications network for mobile users according to the present
0 invention is compatible with UMTS and CDMA2000 standards and with the future systems based on an analogous architecture using open interfaces or through the improvements of previous systems.

It is obvious that many other changes are possible for the person skilled in the art to the telecommunications network for mobile users and/or base station and/or network
.5 radiocontroller and/or method previously described by way of example, without departing from the novelty principles of the inventive idea, and it is clear that in practical actuation of the invention the components may differ in form from the ones illustrated above in detail, and be replaced with technical equivalent elements.

Finally, it is clear that the telecommunications network according to the present
10 invention is not restricted to the sole architectures according to UMTS standard. For instance, it may also be referred to 2.5G standards.

The telecommunications network according to the present invention can also find application through integration with LAN (Local Area Network) and WLAN (Wireless LAN) networks. The signals according to said protocols can be routed by means of
25 cabled or low mobility pico-cellular access subsystems (available e.g. in supermarkets, airports).

CLAIMS

1. A telecommunications network for mobile users, said telecommunications network for mobile users (UNET) comprising a user subsystem (STU) and a transport subsystem (STT), associated by means of an enhanced access subsystem (STA+), which has a general user-access communication interface (Uu) and a transport-access communication interface (Iu)) respectively facing the subsystem (STU) and the transport subsystem (STT), being apt to ensure an exchange of information flows (TS) between said subsystems, said enhanced access subsystem (STA+) letting the network for mobile services UNET recognize as user subsystems (STU) also the fixed terminals associated to said enhanced access subsystem (STA+) through cable connections or anyway without taking recourse to the use of radio channels on frequency bands assigned in exclusivity or under licence.
2. A telecommunications network for mobile users, according to claim 1, characterized in that said enhanced access subsystem (STA+) required for interconnecting the user subsystems (STU) to the transport subsystem (STT) has cable base stations (SCB) – besides the radio base stations (SRB) according to common art – among its components, which associate to the radio network controllers (CRR) through an interface Iub and to general user subsystems, making them appear like user subsystems (STU) to the radio network controllers (CRR) and other components of the transport subsystem (STT).
3. A telecommunications network for mobile users, according to claims 1 and 2, characterized in that the enhanced access subsystem (STA) required for interconnecting the user subsystems (STU) to the transport subsystem (STT) has radio network controllers (CRR) according to prior art among its components, which associate to the transport subsystem (STT) through an interface Iub and control the various base stations (radio base stations SRB and cable base stations SCB) through the special controller-stations interface Iub
4. A telecommunications network for mobile users, according to one or more of the previous claims, characterized in that said cable base stations (SCB) interconnecting to the user subsystems without the use of radio channels or anyway without utilizing radio resources on frequencies granted in exclusivity or under licence, can manage one or more bi-directional or mono-directional control channels, said control channels being conform or not

to standardized channels in the frame of any competent organization.

5 5. A telecommunications network for mobile users, according to one or more of the previous claims, characterized in that the telecommunications network for mobile users (UNET) is a network according to UMTS standard (Universal Mobile Telecommunications System) and said enhanced access subsystem (STA+) is including UTRAN performances (UMTS Terrestrial Radio Access Network).

10 6. A telecommunications network for mobile users, according to one or more of the previous claims, characterized in that said telecommunications network for mobile users (UNET) is a network according to a standard for mobile telecommunications of the third generation pertaining to the family IMT2000.

15 7. A method for obtaining an alternative access to the cellular radio coverage for a telecommunications network for mobile users, characterized in that it has made available fixed access points or anyway access points without the use of radio resources on frequencies granted in exclusivity or under licence, in order to better manage the restricted radio resources.

8. A telecommunications network for mobile users and/or base station and/or network radio controller and/or method for sending information according to the teachings contained in the description herein and annexed drawings.

* * * * *

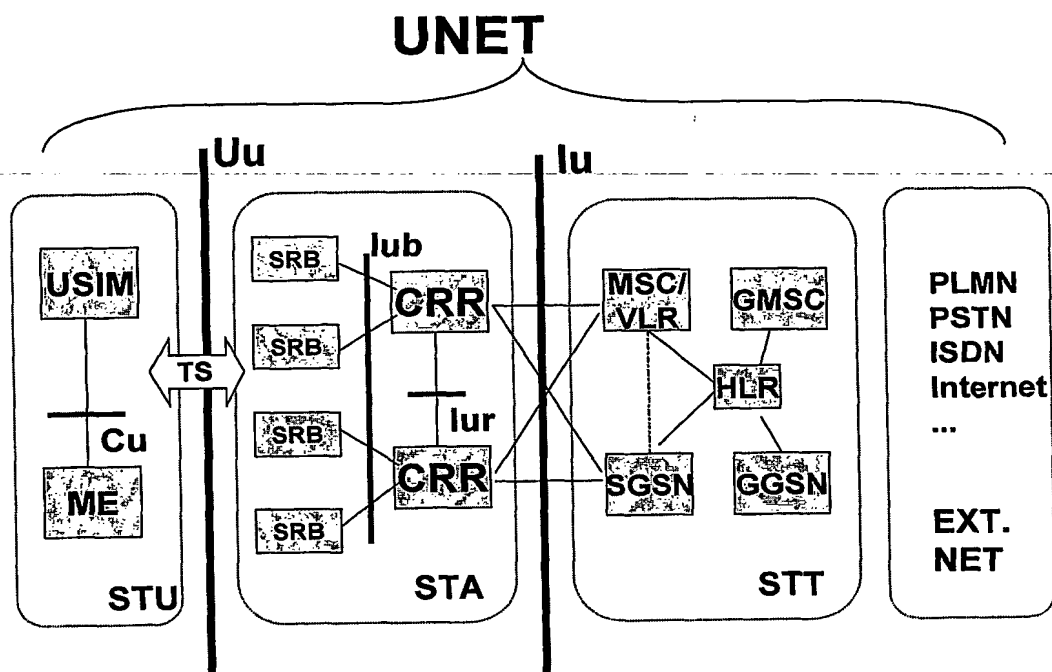


FIG. 1

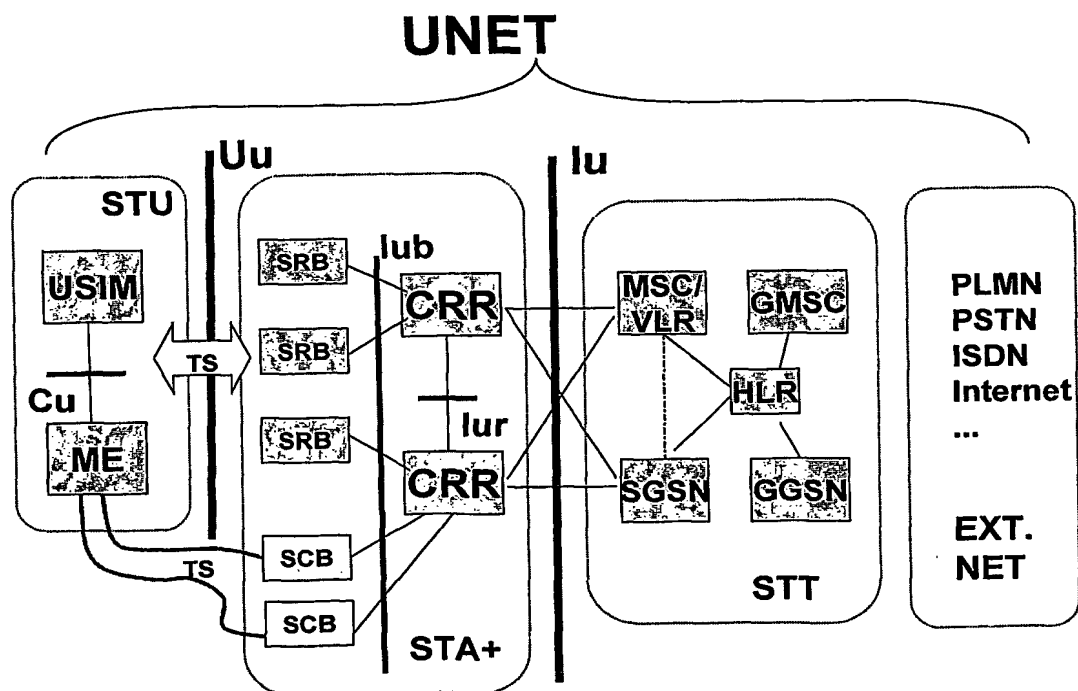


FIG. 2

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/01195

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04Q7/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04Q H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/046839 A1 (LATVA-AHO ANTTI ET AL) 29 November 2001 (2001-11-29) abstract figure 2 page 4, line 1 - page 5, line 10 page 7, line 15 - line 21 page 8, line 11 - line 18 page 9, line 10 - line 28 page 12, line 4 - line 30 ---	1-8
X	US 6 167 271 A (O'CONNELL JOHN ET AL) 26 December 2000 (2000-12-26) abstract; figures 1,2 column 1, line 48 - line 59 column 3, line 38 - line 66 column 5, line 11 - line 23 --- -/--	1-8

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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- * & * document member of the same patent family

Date of the actual completion of the international search

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21/08/2003

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

Inté onal Application No

PCT/IB 03/01195

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference ITC003	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IB 03/01195	International filing date (day/month/year) 02.04.2003	Priority date (day/month/year) 03.04.2002
International Patent Classification (IPC) or both national classification and IPC H04Q7/30		
Applicant ITEC S.R.L. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 03.11.2003	Date of completion of this report 03.09.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Falò, L Telephone No. +49 89 2399-7108



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/B 03/01195**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-8 as originally filed

Claims, Numbers

1-8 filed with telefax on 25.08.2004

Drawings, Sheets

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IB 03/01195

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-8
	No: Claims	
Inventive step (IS)	Yes: Claims	1-8
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-8
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following document:

D1: EP-A-0 766 427 (NOKIA MOBILE PHONES LTD) 2 April 1997 (1997-04-02)

2. The document D1 is regarded as being the closest prior art to the subject-matter of **Claim 1** and shows a wireless telecommunications network for mobile users, in which a gateway is connected to a mobile switching center, on one side, and to a LAN, on the other; the LAN is then connected to a plurality of mobile and fixed terminals.

The subject-matter of **Claim 1** differs from the disclosure of D1 in that the gateway is replaced by an apparatus (SCB) connected with a Radio Network Controller, and hence with a wireless access subsystem, and comprising additional cable connections.

The subject-matter of **Claim 1** is therefore new (Article 33(2) PCT).

3. The problem to be solved by the present invention may be regarded as providing a wired communication channel to a mobile terminal in the access subsystem of a wireless telecommunication network; said problem is solved by providing access subsystem apparatuses (SCB) connected with radio network controllers, each SCB being provided with cable connections allowing communication with the mobile terminal.

The system disclosed in D1 only provides wireless connection (via a wireless interface and a wired LAN) between the mobile terminals and the telecommunication network. Thus, the disclosure of D1 does not solve the problem addressed by the subject-matter of **Claim 1**.

Hence, the combination of features of **Claim 1** is not disclosed, nor rendered obvious by D1.

The subject-matter of **Claim 1** therefore involves an inventive step (**Article 33(3) PCT**).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IB 03/01195

The same considerations as made in respect of **Claim 1** are also valid for independent **Claim 8**, which contains a method whose steps are corresponding to the features of **Claim 1**.

Therefore, the subject-matter of **Claim 8** is novel and involves an inventive step (**Articles 33(2) and 33(2) PCT**).

Claims 2-7 are dependent on Claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

4. It is noted that the cited document D1 has not been acknowledged nor discussed in the opening part of the description. Hence, the requirements of **Rule 5.1(a)(ii) PCT** have not been met.

- ITC003 -**9****CLAIMS**

1. A telecommunications network for mobile users, said telecommunications network for mobile users (UNET) providing wireless communication to wireless mobile user subsystems (STU) by means of an access subsystem (STA+) and a transport subsystem (STT), said access subsystem (STA+) comprising:

- 5 - one or more radio base stations (SRB) exchanging data signals and voice (TS) with said wireless mobile user subsystems (STU) through a radio user-access communication interface (Uu),
- one or more radio network controller (CRR) controlling operation of one or more of said radio base stations (SRB), said radio network controller
- 10 connecting said access subsystem (STA+) to said transport subsystem (STT) by means of a transport-access communication interface (Iu),

characterized in that said access subsystem comprises additional apparatuses (SCB) for connection between said wireless mobile user subsystems (STU) and a radio network controller (CRR), and in that said access subsystem (STA+) also comprises additional

15 cable connections between said additional apparatus (SCB) and said wireless mobile user subsystems (STU) for allowing the communication.

2. A telecommunications network for mobile users, according to claim 1, characterized in that said additional apparatuses (SCB) communicate with said radio network controllers (CRR) through the same interface (Iub) used by said radio base

20 stations (SRB) to communicate with said radio network controllers (CRR).

3. A telecommunications network for mobile users according to claims 1, characterized in that additional stations are preset for connection to said additional apparatuses through said cable connections and that said additional stations are provided with a socket for connecting the user terminal.

25 4. A telecommunications network for mobile users, according to claim 1, characterized in that additional stations are preset for connection to said additional apparatuses through said cable connections and that said additional stations are provided with low power wireless technologies such as bluetooth.

5. A telecommunications network for mobile users according to claim 3 or 4,

30 characterized in that said additional stations are equipped with an electric socket.

6. A telecommunications network for mobile users, according to one or more of

- ITC003 -

10

the previous claims, characterized in that the access to said telecommunications network and the communications between elements of said telecommunication network are managed according to the UMTS standard (Universal Mobile Telecommunications System).

5 7. A telecommunications network for mobile users, according to one or more of the previous claims, characterized in that the access to said telecommunications network and the communications are managed according to a standard for mobile telecommunications of the third generation pertaining to the family IMT2000.

10 8. A method for the communication of mobile users subsystems (STU) in a telecommunications network for mobile users (UNET), said telecommunications network for mobile users (UNET) providing wireless communication to wireless mobile user subsystems (STU) by means of an access subsystem (STA+) and a transport subsystem (STT), said access subsystem (STA+) comprising:

15 - one or more radio base stations (SRB) exchanging data signals and voice (TS) with said wireless mobile user subsystems (STU) through a radio user-access communication interface (Uu),

20 - one or more radio network controller (CRR) controlling operation of one or more of said radio base stations (SRB), said radio network controller connecting said access subsystem (STA+) to said transport subsystem (STT) by means of a transport-access communication interface (Iu), and

25 characterized in that said method provides for additional apparatuses (SCB) for connection between said wireless mobile user subsystems (STU) and a radio network controller (CRR), and cable connections ~~allowing the communication~~ between said additional apparatus (SCB) and said wireless mobile user subsystems (STU) for allowing the communication.

Box No. VIII (iii) DECLARATION: ENTITLEMENT TO CLAIM PRIORITY

The declaration must conform to the standardized wording provided for in Section 213; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iii). If this Box is not used, this sheet should not be included in the request.

Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application specified below, where the applicant is not the applicant who filed the earlier application or where the applicant's name has changed since the filing of the earlier application (Rules 4.17(iii) and 51bis.1(a)(iii)):

in relation to this international application,

STRIULI Alessandro is entitled to claim priority of earlier application

No. VE2002A000013

by virtue of the following:

the applicant is the inventor of the subject matter for which protection was sought by way of the earlier application.

This declaration is made for the purpose of the following designations for national and/or regional patents: US.

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iii)".

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